

ESIP Products and Services Testbed: The Early Years

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A decorative graphic consisting of several sets of concentric circles, resembling ripples in water, located in the bottom right corner of the slide.

- o Expert Skills
- o Unique Object Identifiers
- o Semantic Web
- o Themed Portals



Expert Skills Service



Expert Skills Service

- The ESIP Federation collectively includes an exceptionally wide range of expertise among its participating members.
- The testbed enables us to explore various approaches to capture expert skills residing within the Federation and categorize them in a knowledge base so that this information can be offered as a service.
- Ultimate Benefit: Promotion of expert skills available within the Federation.

Expert Skills Strategies

- Web-based database application.
- Skill categories and skill levels are pre-defined
- Provides functions for ESIP members to create/edit their skills and levels, and search out experts by skills and levels.

Skills Categories and Levels

➤ Main Categories

- Applications / Societal Benefit Areas
- Decisions
- Education
- Information Technology and Interoperabilities
- Measurement
- Science

* There are sub-categories under each main category.

➤ Levels

- National/International Leader
- Organizational Leader
- Expert
- Knowledgeable
- Novice

Main Functions

➤ Skills editor

- Set skills viewing privacy
- Add skills and levels

➤ Expert search

- Find experts with certain skills and levels

Expert Skills Service

To get started, **Sign Up** and contribute information about your skills, expertise and interests. The information will be included in our expert skills database.

Already registered, **Login** to manage your expert skills registration.

Forgot password, type in your login email, we will send you a new password.

Click [here](#) to search expert.

User Login

Username or Email:

Password:

Login

Click [here](#) to sign up.

Add skills and levels

Expert Skills Service

[Expert Search](#)[General Settings](#)[Skills Setting](#)[Logout](#)

robert raskin

Skills Setting

Privacy Public - Visible to outside world set

► Applications / Societal Benefit Areas

► Decisions

► Education

▼ Information Technology and Interoperability

► Access Protocols

► Data Services

▼ Formats

☐ HDF-EOS Expert

☐ HDF-EOS5 Expert

☒ HDF4 National/International Leader

☒ HDF5 Expert

☐ netCDF Expert

► Hardware

► Languages

► Social Networking

► Software

► Standards

► Measurement

► Science

add

Skill	Type	Category	Skill Level	Operation
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Add skills and levels (continue)

Expert Skills Service

[Expert Search](#)[General Settings](#)[Skills Setting](#)[Logout](#)

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Skills Setting

Privacy Public - Visible to outside world set

- ▶ Applications / Societal Benefit Areas
- ▶ Decisions
- ▶ Education
- ▶ Information Technology and Interoperability
- ▶ Measurement
- ▶ Science

add

Skill	Type	Category	Skill Level	Operation
Informal Education	Educational Level	Education	Expert	delete
WMS	Access Protocols	Information Technology and Interoperability	National/International Leader	delete
Coast	Ocean Science	Science	National/International Leader	delete
HDF4	Formats	Information Technology and Interoperability	National/International Leader	delete
HDF5	Formats	Information Technology and Interoperability	Expert	delete

Search expert

Expert Skills Service

Expert Search

General Settings

Skills Setting

Logout

Expert Search

To find members with desired skills: Drill down category list, check desired skill areas, select minimum level of expertise, then press Search

- ▶ Applications / Societal Benefit Areas
- ▶ Decisions
- ▶ Education
- ▼ Information Technology and Interoperability
 - ▶ Access Protocols
 - ▶ Data Services
 - ▼ Formats
 - ☐ HDF-EOS Expert
 - ☐ HDF-EOS5 Expert
 - ☒ HDF4 Novice
 - ☒ HDF5 Novice
 - ☐ netCDF Expert
 - ▶ Hardware
 - ▶ Languages
 - ▶ Social Networking
 - ▶ Software
 - ▶ Standards
 - ▶ Measurement
 - ▶ Science

search

Search expert (continue)

Expert Skills Service

[Expert Search](#)[General Settings](#)[Skills Setting](#)[Logout](#)

Expert Search

To find members with desired skills: Drill down category list, check desired skill areas, select minimum level of expertise, then press Search

- ▶ Applications / Societal Benefit Areas
- ▶ Decisions
- ▶ Education
- ▶ Information Technology and Interoperability
- ▶ Measurement
- ▶ Science

Last Name	FirstName	Skill	Type	Category	Level
Chi	Eugene	HDF4	Formats	Information Technology and Interoperability	Expert
Chi	Eugene	HDF5	Formats	Information Technology and Interoperability	Expert
Mattmann	Chris	HDF4	Formats	Information Technology and Interoperability	Expert
Mattmann	Chris	HDF5	Formats	Information Technology and Interoperability	Expert
Prados	Ana	HDF5	Formats	Information Technology and Interoperability	Knowledgeable
raskin	robert	HDF4	Formats	Information Technology and Interoperability	National/International Leader
raskin	robert	HDF5	Formats	Information Technology and Interoperability	Expert
Yang	Kent	HDF4	Formats	Information Technology and Interoperability	Expert
Yang	Kent	HDF5	Formats	Information Technology and Interoperability	Expert

Unique Object Identifiers



Unique Object Identifiers

- The Preservation and Stewardship Cluster and the NASA Technology Infusion Working Group have been considering permanent naming schemes for data products. These identifiers can serve as references in journal articles and must include versioning representations.
- Many naming options have been promoted, but the best choices for Earth science data require careful examination. Two datasets may differ only in format, byte order, data type, access method, etc., creating facets (dimensions) not relevant to classification schemes for books (Library of Congress, Dewey Decimal).
- Ultimate Benefit: Permanent, unique names for data Federation data products.

Digital Object Identifier

➤ Database

- Glacier photograph
- 13000 records of photograph metadata

➤ UC3EZID

- EZID is a DOI catalog service system
 - <http://www.cdlib.org/services/uc3/ezid/index.html>
- We use EZID to store and retrieve our DOIs

➤ DataCite

- DataCite is an International Data Citation
 - <http://www.datacite.org/>
- We are mapping glacier metadata to DataCite

Create DOIs

We have used EZID API to create DOIs of Glacier photograph metadata.

Unique Object Identifiers

[Home](#)[Database](#)[DOI](#)

UOI

- Home
- Database
- DOI
 - Create DOI
 - View DOI

Home » DOI

Create DOI

We have developed the program to automatically create DOI.

We have created DOI for the first 20 records using the program.

For example, the following is the data for creating the DOI of first record:
<http://n2t.net/ezid/id/doi:10.5060/D4/NSIDC/v1/okpilak2004080502>

Photo ID: okpilak2004080501
Photographer name: Nolan\ Matt
Glacier Name: Okpilak Glacier
Photo number:
Publisher: National Snow and Ice Data Center/World Data Center for Glaciology\ Boulder
Photo year: 2004
Photo month: 8
Photo day: 5
Province: AK
Country: USA
Lat: 69.19
Lon: -144.15
Form: Digital
Description:
Keyword: Matt Nolan Note: Photograph held by the National Snow and Ice Data Center/World Data Center for Glaciology\
Rights: Boulder. May be used freely if properly cited.
Thumbnail location: /DEV/INTERNET/data/glacier_photo/thumbnails/okpilak2004080501.jpg
Jpeg location: ftp://sidads.colorado.edu/DATASETS/GDPD/okpilak2004080501.jpg
High res size: 11234
Box number:
Shipped date: 2006
Received date: 2006

View and Update DOIs

We have used EZID API to view and update DOIs of Glacier photograph metadata.

[Home](#) » [DOI](#)

View DOI

Click DOI detail link, the program will use EZID API to read out its detailed information.

Record	Photo ID	DOI Detail
1	okpilak2004080501	10.5060/D4/NSIDC/v1/okpilak2004080501
2	okpilak2004080502	10.5060/D4/NSIDC/v1/okpilak2004080502
3	zmutt1894081101	10.5060/D4/NSIDC/v1/zmutt1894081101
4	AGS_M_58_S63	10.5060/D4/NSIDC/v1/AGS_M_58_S63
5	USGS90V1_277	10.5060/D4/NSIDC/v1/USGS90V1_277
6	USGS90V1_278	10.5060/D4/NSIDC/v1/USGS90V1_278
7	USGS90V1_279	10.5060/D4/NSIDC/v1/USGS90V1_279
8	USGS90V1_280	10.5060/D4/NSIDC/v1/USGS90V1_280
9	USGS90V1_282	10.5060/D4/NSIDC/v1/USGS90V1_282
10	USGS90V2_283	10.5060/D4/NSIDC/v1/USGS90V2_283
11	mccall1958070001	10.5060/D4/NSIDC/v1/mccall1958070001
12	mccall1958070002	10.5060/D4/NSIDC/v1/mccall1958070002
13	mccall2003081401	10.5060/D4/NSIDC/v1/mccall2003081401
14	mccall2004081001	10.5060/D4/NSIDC/v1/mccall2004081001
15	okpilak1907060001	10.5060/D4/NSIDC/v1/okpilak1907060001
16	okpilak1907060002	10.5060/D4/NSIDC/v1/okpilak1907060002
17	USGS90V1_266	10.5060/D4/NSIDC/v1/USGS90V1_266
18	USGS90V1_267	10.5060/D4/NSIDC/v1/USGS90V1_267
19	USGS90V1_268	10.5060/D4/NSIDC/v1/USGS90V1_268
20	USGS90V1_269	10.5060/D4/NSIDC/v1/USGS90V1_269

View Details

to get <http://n2t.net/ezid/id/doi:10.5060/D4/NSIDC/v1/okpilak2004080501>

```
is: doi:10.5060/D4/NSIDC/V1/OKPILAK2004080501
res size: 11234
r pairs: 1002
le: datacite
144.15
Photograph held by the National Snow and Ice Data Center/World Data Center for Glaciology
id date: 2006
day: 5
ice: AK
r geom: 0101000020E6100000CDCCCCCCC0462C05C8FC2F5284C5140
ID: okpilak2004080501
ption:
Digital
st: http://n2t.net/ezid/id/doi:10.5060/D4/NSIDC/V1/OKPILAK2004080501
group: esip_dspcl
s:
wedby: ark:/b5060/d4/nsidc/v1/okpilak2004080501
9.19
r Name: Okpilak Glacier
ther: National Snow and Ice Data Center/World Data Center for Glaciology Boulder
umber:
id: Matt Nolan
r: Boulder. May be used freely if properly cited.
y: USA
location: AL3700
loaded: 20070601
ail location: /DEV/INTERNET/data/glacier_photo/thumbnails/okpilak2004080501.jpg
location: ftp://sidacs.colorado.edu/DATASETS/GPDP/okpilak2004080501.jpg
ed: 1309837750
red date: 2006
number:
rapher name: Nolan Matt
:: esip_dspcl
```

DataCite

- We are working on further mapping the fields of Glacier photograph metadata into DataCite fields.

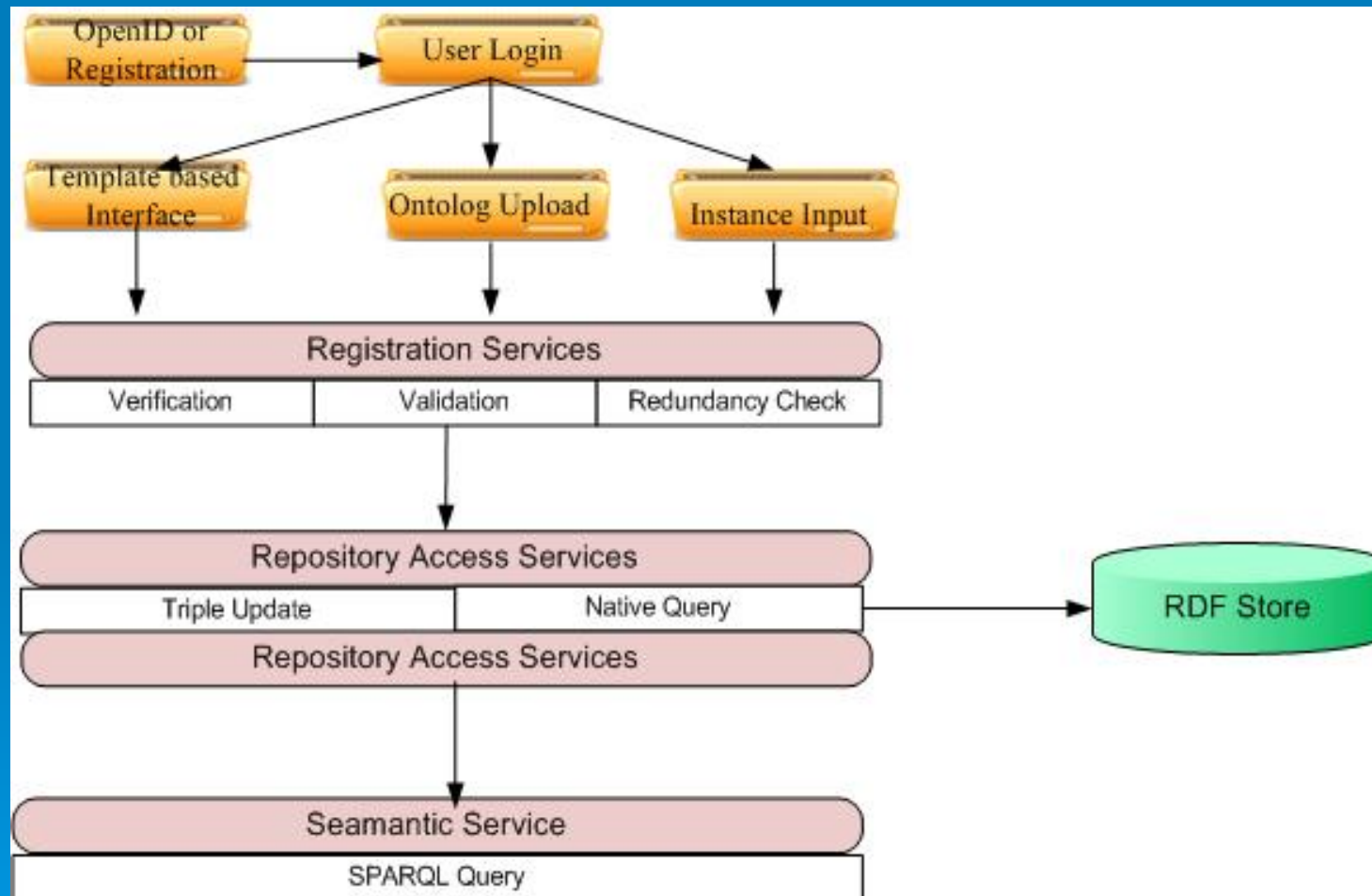
Semantic Web



Introduction

1. Develop an online interface to allow semantic registration of datasets and other web resources;
2. Provide SPARQL capability to validate backbone ontology and registration process;
3. Provide a use case to use semantic reasoning.
4. Apply ESIP datatype and service ontology as the supporting semantic schema.

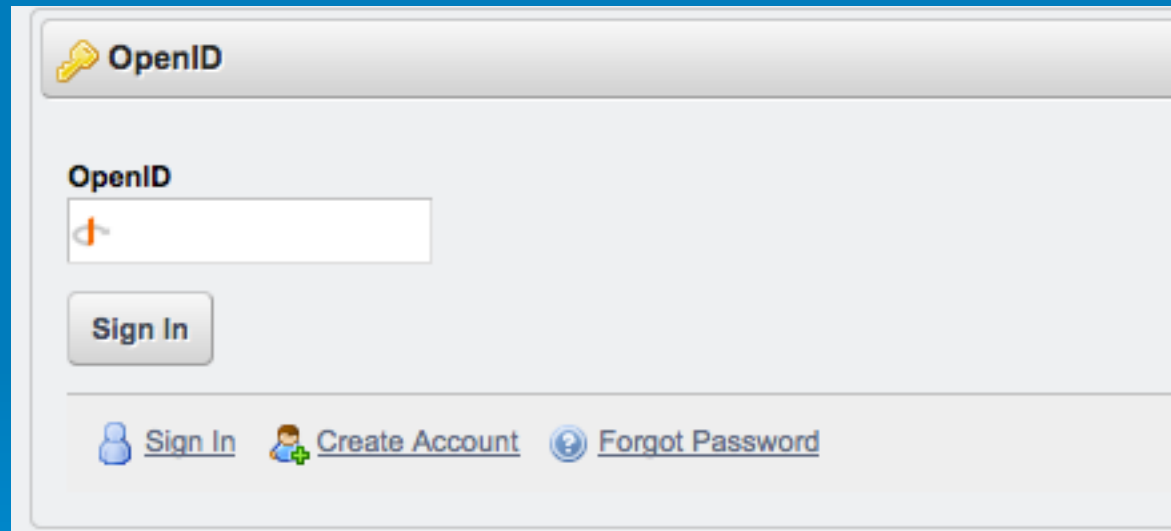
Architecture



Main Functions

- User Login and Ontology upload;
- Instance Input;
- SPAQL Search.

➤ User Login and Ontology upload






The image shows a web form for OpenID login. It has a title bar with a key icon and the text 'OpenID'. Below the title bar, there is a label 'OpenID' and a text input field. A 'Sign In' button is positioned below the input field. At the bottom of the form, there are three links: 'Sign In' with a user icon, 'Create Account' with a person and plus icon, and 'Forgot Password' with a question mark icon.

OpenID

OpenID

Sign In

 [Sign In](#)  [Create Account](#)  [Forgot Password](#)

➤ Instance Input

Metadata:

Head:

```
xmlns:esip="http://esipfed.org"  
xmlns:twproject="http://tw.rpi.edu/project/"  
xmlns:twperson="http://tw.rpi.edu/person/"  
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"  
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"  
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"  
xmlns:owl="http://www.w3.org/2002/07/owl#"  
xmlns="http://testbed.gmu.edu/esip/ESIP_Projects_v0.owl#"  
xml:base="http://testbed.gmu.edu"  
/esip/ESIP_Projects_v0.owl">
```

Input RDF Fragment *:

```
<esip:ProjectParticipant rdf:about="http://tw.rpi.edu/person/PeterFox">  
  <esip:worksOnProject>  
    <esip:Project rdf:about="http://tw.rpi.edu/project/DQSS">  
      <esip:isFundedBy>NASA ACCESS</esip:isFundedBy>  
      <esip:worksWithTechnology>Jena</esip:worksWithTechnology>  
    </esip:Project>  
  </esip:worksOnProject>  
</esip:ProjectParticipant>
```

```
</rdf:RDF>
```

Tail:

Choose Ontology:

ESIP_Projects_v0.owl

Message:

Registration succeeded!

Registration >

➤ SPARQL Search

Metadata:

Choose Ontology :

ESIP_Projects_v0.owl

*

Query *:

```
PREFIX esip: <http://esipfed.org>
SELECT ?project ?technology
WHERE
{
  ?project esip:worksWithTechnology ?technology
}
```

Status:

Query done!

Result:

```
http://tw.rpi.edu/project/DQSS "semantic"
```

Message:

Query >

Use Case

- Air quality semantic search case: based on air quality ontology and reasoning.
- Data Sources:
 1. GOS (Geospatial One Stop);
 2. GCMD (Global Climate Master Directory);
 3. NCDC (National Climatic Data Center);
 4. ECHO (Earth Observation ClearingHouse).

Title: MODIS/Terra Total Precipitable Water Vapor 5-Min L2 Swath 1km and 5km V005

Source: [echo](#)

OnlineAccessible: no

Provider:

Start Date: 2006-06-08 20:40:35.000

End Date: 2010-10-29 18:53:48.574

Description:

[metadata](#)

Title: MODIS/Terra Temperature and Water Vapor Profiles 5-Min L2 Swath 5km V005

Source: [echo](#)

OnlineAccessible: no

Provider:

Start Date: 2006-06-08 20:48:38.000

End Date: 2010-10-29 18:53:48.711

Description:

[metadata](#)

Title: MODIS/Terra Aerosol Cloud Water Vapor Ozone Daily L3 Global 1Deg CMG V005

Source: [echo](#)

OnlineAccessible: no

Provider:

Start Date: 2006-06-08 20:49:49.000

End Date: 2010-10-29 18:53:48.788

Description:

[metadata](#)

Title: Global Multi-Resolution Topography WMS Service [GMRT_WMS]

Source: [gcmd](#)

OnlineAccessible: yes

Description: 2. Undergrowth and Small Mammal Response to Overstory, USDA/FS [USDA_FS67] of Boston's

Resources

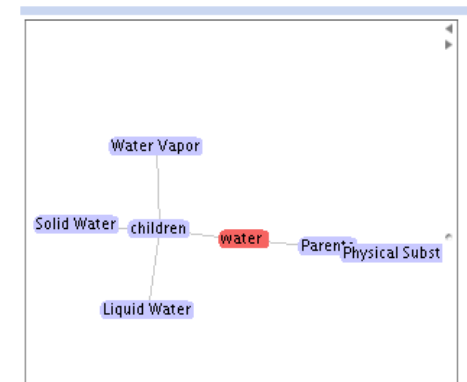
- ☒ NOAA NCDC - 0 
- ☒ NASA GCMD - 15 
- ☒ FGDC GOS - 0 
- ☒ NASA ECHO - 3 
- ☒ NASA ESG - 0 

Refine Your Search Here:

+Physical Substance

+water wms

- ☐ Solid Water
- ☐ Liquid Water
- ☐ Water Vapor



Further Info

- Website: The ESIP Semantic Testbed is operating at <http://testbed.gmu.edu>
- Contact:
Chaowei Phil Yang: cyang3@gmu.edu

Themed Portals

